Project Title: Development of an EV-D68 animal model

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Project Description:

Since 2014, human enterovirus D68 (EV-D68) has reemerged to cause severe respiratory disease worldwide, including in Asia [1]. Because person-to-person transmission of EV-D68 is mainly by the respiratory route, the potential for epidemics cannot be underestimated. In addition to severe respiratory disease, EV-D68 infection in children and young adults may give rise to debilitating central nervous system (CNS) complications such as acute flaccid myelitis (AFM) and encephalomyelitis leading to death or serious and permanent neurological sequelae [2]. So far, hundreds of children have been reported to develop CNS complications in the Western hemisphere but we predict outbreaks will occur in Malaysia and other parts of Asia, as EV-D68 is readily isolated from clinical specimens [2]. In fact, with the imminent eradication of the poliovirus worldwide, EVD68 (like enterovirus A71) is being suggested as an important cause of non-polio cause of poliomyelitis and encephalomyelitis in the near future [2-4]. Very little work has been done to produce good animal models for human EV-D68 infection and the limited existing models do not adequately mimic the human disease well [5-7]. Based on our group's previous experience developing good animal models for enteroviruses, including for Enterovirus A71 (EV-A71) [8, 9] and Coxsackievirus A16 [10], we propose to develop a small animal model by an intranasal route to study viral pathogenesis, neuroinvasion and neuropathology. Overall, the main aim is to develop therapeutics for treatment and a vaccine to be tested in vivo. This could lead to products for subsequent commercial development. A further advantage of a good animal model that can mimic human disease would be the knowledge gained from studying the neuropathogenesis of EV-D68. Moreover, the methodology involved in producing this model could potentially be patented.

Required skills (preferably not necessary):

1. Biomedical Sciences/Neuroscience/Molecular Virology or other equivalent Hons or Master's degree
2. Experience on experimental molecular virology (infection), animal handling techniques
3. Strong writing and analytical skills

References

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